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The Sun.

THURSDAY, JANUARY 2. 1873.

Amusements To-Day.

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DAILY, per year, to mail subscribers,	$6 00
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Twenty copies to one address,	35 00
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ALL ADVERTISEMENTS charged per line of solid Agate space.
ADVERTISEMENTS IN SEMI-WEEKLY, 10 cents per line.
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For the accommodation of up-town residents, advertisements for THE SUN will be received at our regular rates at the up-town advertisement offices 54½ West Thirty-second street, junction of Broadway and Sixth avenue, and 308 West Twenty-third street, opposite Grand Opera House, and on the east side at 511 Grand street, near East Broadway, from 8 A. M. to 8:30 P.M.

The First Election.

The New Hampshire Democrats are first in the field with a call for a State Convention since the Presidential election. The Convention, which is set for Thursday next, will nominate a State ticket; the Congressional Conventions will be held later.

The State has been carried by the Republicans by decisive majorities at the last two elections, namely, the State election in March and the Presidential in November, 1872. In 1871 the Republican candidate for Governor was elected by a very small majority, but the Democrats elected all their members of Congress, and had in the Legislature, by coalition with the Labor Reformers, one majority, which gave them control of what little patronage there is in the State and made them responsible for the legislation of the year. They were not entirely wise or discreet in their use of power, and the consequences of their unwisdom were apparent in their defeat by decided majorities in the spring of 1872. They have, however, three members, Messrs. HIBBARD, BELL, and PARKER, in the present Congress, and will doubtless make some show of a contest for their reelection, though it seems like a sort of forlorn hope for any of them. Whether the Liberals will unite cordially with them, and upon what basis, are questions to be settled in the Conventions.

New Hampshire and Connecticut, whose elections are the first to follow the Presidential, are the two close States of New England, and with them, sooner or later, will very likely begin the refluent wave which in the natural order of political events must overwhelm the party in power before the close of the next Presidential term. But we do not look for any powerful indication of that movement in either State at the coming elections. They come too close upon the heels of the great contest, and before the new Administration has been fairly launched, to show that popular revulsion against the dominant party which we look upon as inevitable and as only a question of time.

And yet there seems no good reason, if there were any such thing as reason in party politics, why the three members of Congress, who have served their constituents so far faithfully and honestly, should not be returned. There is, indeed, no excuse for displacing them. The only pretext for a change is that somebody else wants a place. Messrs. HIBBARD, BELL, and PARKER are Democrats, to be sure, but they are in a minority in Congress, and can do no harm if they desired to. The Republican majority in the House is already too large for comfort or safety. The wisest men of the party see and confess that its greatest danger to-day is in its great strength. Cannot the Republicans of New Hampshire see it too? Paradoxical as it may seem, there is nothing plainer than that the Republicans of New Hampshire can in no way contribute more to the perpetuity of their party supremacy than by returning the three Democrats who now represent that State in Congress. They will be sure then to have honest men at least; they will not expose their new men to the temptations which power almost unchecked offers its representatives; and they will be helping to put on the brakes to a party which can only in that way be saved from destruction. No one supposes, however, that they will do this. The politicians are too strong and too hungry to permit it. They will go into the campaign just as though the nation's safety depended on Congress being unanimously Republican. They will probably elect the three Congressmen and carry the State, and so, in the blind way in which Providence sometimes leads men and parties, contribute to the eventual disruption of their party.

And probably that is the best way after all.

The Horse-Car Banditti.

A lively revival has recently sprung up in a line of business in this city that is highly remunerative and attended with slight risks. This business is carried on daily and nightly on the different lines of street cars. The trade is generally prosecuted by an active party of from three to five. All the capital required to enter the cars and the business is five cents and a little nerve. A brief recital of recent transactions, most of which have occurred within the last three days, will give a slight idea of the extent and profits of the business. The information has been gleaned from police reports, advertisements and personal statements. The first series of operations were gentle affairs, but the closing incidents may make nervous people uneasy.

Mr. JOHN O'NEIL of 22 Kilby street, Boston, offers $100 reward for the recovery of his gold hunting watch and chain, stolen from him while on a Fourth avenue car. Mr. O'NEIL promises to ask no questions if the watch is returned.

A gentleman who can be communicated with at SEYFFERT's saloon, Twenty-fifth street and Third avenue, offers more for the recovery of his pocketbook and gold watch and chain, lost from the front platform of a Third avenue car, than can be obtained from a "fence." The gentleman threatens if his property is not returned to employ detectives, regardless of expense. Foolish man! He will only waste his time and money.

Mr. GEORGE J. AGG, while riding at night on a Belt line car near Murray street, was relieved of his gold watch and chain and $151. The operator escaped, but the police have a description of him. Lucky operator.

If the operator who relieved a gentleman of his self-winding gold watch while on the rear platform of a Sixth avenue car last Friday evening will return the same to 309 Sixth avenue, third floor, front, he will receive $40 reward and be relieved from answering embarrassing questions.

Mr. A. OAKLEY of 224 West Twenty-fourth street will gladly give $50 for the return of his Geneva watch and ask no questions. Mr. OAKLEY parted with his watch last Saturday evening, while riding in a Sixth avenue car.

S. FARRAR & Co., 212 Grand street, offer $50 and promise to ask no questions if a double-cased gold watch, lost on a Third avenue car, is returned to them.

The operator who captured a portemonnaie containing money receipts and a hair earring, on a Third avenue car, will receive a liberal reward at 214 East Thirty-ninth street.

The operator who found a pocketbook on a University car on Monday may keep the money on returning the papers safely through the mail to box 2,051, Post Office.

A gentleman connected with the Bowery National Bank will cheerfully hand over $75 for his gold watch, lost on a Fourth avenue car. He promises not to be inquisitive as to how it was found.

A gentleman at 38 Warren street, who is not at all curious as to how he lost his watch while on Broadway car No. 30, will thankfully present $30 to the finder.

Mr. DAVID WOOD, at the Astor House, will give a liberal token of his esteem to the lucky individual who found his well-stuffed wallet on a Fourth avenue car.

The operator who cornered on a black wallet containing money, in Fourth avenue car No. 7, will be suitably rewarded on application to the Metropolitan National Bank.

Mr. F. W. ROGERS will ask no questions and give $25 for the return of his gold watch. Mr. ROGERS parted with his watch on a Third avenue car.

A lady will give a liberal reward for the return of her black Thibet shawl, with palm leaf border, to 151 East Forty-eighth street. The lady parted with her shawl while leaving a Third avenue car on Monday evening.

Miss COATES of 528 Sixth avenue will pay a reward for the recovery of her mink muff, which she lost while getting on a Broadway car on Tuesday.

We are informed by Mr. WILLIAM MURDOCK, a gentleman doing business in Cliff street, that recently, accompanied by his wife, he stepped on car 95 of the Desbrosses street line about 6 P. M. He had assisted his wife inside the door of the car, when a young man rushed out, shoved a valise in Mr. MURDOCK's face, pushed him back, and then held one of his hands firmly up against the top of the car, while another operator pinned his other hand down to the back railing, and then other operators went through Mr. MURDOCK's pockets, relieving him of all his valuables. The conductor started to Mr. MURDOCK's assistance, but was confronted by one of the robbers, who, on the plea that the conductor had not given him the right change, knocked him down in the middle of the car. The robbers escaped.

Mr. JOSEPH TURNER, President of the Shoe and Leather Bank of Boston, was recently followed by two of these operators from a Desbrosses street car to a Broadway car. On the latter car they robbed Mr. TURNER of his diary, containing his money. In another pocket he had $25,000 worth of bonds and papers.

The other afternoon Mr. OCTAVIUS OMMANCY, an English Justice of the Peace, was riding in an Eighth avenue car. An operator who gave his name as JOHN WOOD snatched a valuable presentation watch from Mr. OMMANCY's vest pocket. The bold thief was instantly arrested by Officer KINSLEY, who happened to be in the car. The prisoner was taken to Jefferson Market police station, where he made a fierce assault on his captor in open court for presuming to interfere in his little business operations.

One Sunday night a gang of these operators jumped on a car of the Grand street and Dry Dock line. The conductor, Mr. CHARLES COLBY, being a little eccentric, shouted out, "Look out for pickpockets!" The operators jumped off the car. On the return trip they again boarded his car, and struck Mr. COLBY a murderous blow over his eyes. He was knocked senseless and nearly killed. The thick leather peak of his cap alone saved his life. Messrs. FRANCIS BRADY and HUGH REILLY, *alias* BLINK REILLY, were arrested, and recognized by Mr. COLBY as his assailants. But Justice blinked and the operators were allowed to depart. Mr. BLINK REILLY was again arrested on Tuesday for operating in a Third avenue car, but as he enjoys the reputation of a long, steady, and skilful operator, he will doubtless soon resume his old business.

A new administration of city affairs may perhaps put an end to these profitable pursuits.

Effigy Sargent.

It appears that a report that the election of AARON A. SARGENT to the United States Senate was considered in Washington as an endorsement of the Goat Island job by the people of California has created some feeling on the Pacific Coast. This apprehension is entirely unnecessary. It is perfectly well understood in Washington that Mr. SARGENT only represents the Central Pacific Railroad, which sent him to the Senate, and this impression generally prevailed even before his constituents gave it emphasis by burning him in effigy to the accompaniment of "horrible squeakings by devils' fiddles," whatever those instruments may be.

It is hardly probable that in the face of the Credit Mobilier exposures the Goat Island project will receive much favor in either House of Congress hereafter. Of course SARGENT will advocate it, for that was what he was sent to the Senate for. But the proposal to make a gift of real estate belonging to the United States of the value of several millions of dollars to an overgrown monopoly which holds a property producing annual surplus earnings to the amount of $5,000,000, is one which, in the present state of popular sentiment, a member of Congress free from obligations to the railroad company might well hesitate to approve, especially when he considers that this property has been paid for mainly by the taxpayers of the country, who are annually called upon—and will be for many years to come—to meet the interest on the bonds of this wealthy corporation.

There are many reasons why the Government should refuse to release its title to Goat Island in favor of the Central Pacific Company, and one of these is the unparalleled insult put upon Congress by that company last fall, in its attempt to levy on the people of San Francisco the amount of $2,500,000 by assuming the power to control the action of our national legislators. This attempt was made in the form of a proposition which was substantially a threat, that unless the city of San Francisco would vote the company the sum already named, it would obtain Goat Island from Congress and erect a new city on that side of the bay—the inference being that Congress was completely under the domination of the railroad company. It is high time that this corporation should be taught that sending a Senator to do its work in Washington does not give it the power to dictate the action of the whole body of Congressmen.

Civil Service Reform.

The following interesting political intelligence is published and we trust is perfectly authentic:

"The Hon. A. B. CORNELL's resignation as Surveyor took effect yesterday. His retirement will not necessitate any great change in the Custom House, as the duties of the office will be performed by Mr. BENEDICT, Deputy Surveyor, until Mr. CORNELL's return from the Legislature, when he will resume the place."

This is in perfect accord with the great principles of civil service reform. Mr. CORNELL is a man of fine presence, besides being one of the pleasantest politicians in the State; and he will look exceedingly well in the Speaker's chair at Albany. His services to the party are great, and the Republicans will not think it too much that the important office he has resigned should be kept for him, so that he can be reappointed to it and return to its administration next April, after he has got through being Speaker.

Gen. GARFIELD is reported to have expressed the belief that the great obstacle in the way of civilizing the Indians of Montana, whom he visited last summer, is a discouraging lack of acquisitiveness in their character. This has not usually been regarded as a distinguishing trait in the Indian, and the illustrations given by Gen. GARFIELD to substantiate his views go to show that he would perhaps have more accurately expressed himself if he had said their great failing is improvidence. The Indian is certainly addicted to the exercise of a generous hospitality, which is carried to extremes when he impoverishes himself to feed his shiftless brethren, as is frequently the case; though when he is in turn destitute he is usually quite as ready to impose upon the good nature of any acquaintance who is better provided with the necessaries of life. Thus, as Gen. GARFIELD says, an industrious fellow, who had accumulated a store of dried meat or fish for winter consumption, would soon be visited by a crowd of improvident brethren, who would live on him as long as he had anything to eat, and when his last morsel was gone he would join his guests, and they would all quarter on some other member of the tribe. But though the Indians are generally spendthrifts, it has not often been charged against them that they are indifferent to the acquisition of property—at least our border population have not discovered this trait in the course of their experience with their savage neighbors. Gen. GARFIELD, however, makes one excellent suggestion, and that is that the chief hope for the ultimate civilization of the wild tribes is to be found in their love for horses and cattle, the only form of property which they appear to set much value on. They rarely give away their live stock, and if they are ever to be led out of barbarism the most natural means of effecting this result will be to make them first a nomadic pastoral people. It is impossible to convert a savage tribe at once into peaceful agriculturists, but they could easily be led to enter into the occupation of stock raising, for which a vast extent of country among the Rocky Mountains is admirably adapted. Then, in time, they would be fitted for adopting the pursuit of agriculture as a further step toward complete civilization. These views, which have been repeatedly urged in THE SUN, are worthy the attention of those who are interested in the fate of our aboriginal tribes.

The movement for a Constitutional Convention in Connecticut, to which reference was lately made in THE SUN, is making some progress. It began in Bridgeport, where prominent men of both parties signed a recommendation in that behalf, and was followed by a similar movement in New Haven. Hartford has now joined in it, and the signatures of Gen. HAWLEY, Gov. JEWELL, Mayor H. C. ROBINSON, Postmaster BURNHAM, and other Republicans, with RICHARD D. HUBBARD, WILLIAM W. EATON, Judge WALDO, BURR Brothers of the *Times*, WM. J. HAMERSLEY, CHARLES R. CHAPMAN, and other Democrats appear on the call in its favor.

Since the failure of cundurango as a specific for the cure of cancer, and the consequent wreck of Secretary FISH's reputation as a medical man, people have looked with incredulity upon any reported cures of this terrible disease by unusual methods. But the Kansas City *Times* gives an account of a cure performed in that place which is worthy the attention of physicians. Mr. A. C. CHACE, a well-known resident of Kansas City, discovered about six years ago a small red spot growing upon his left cheek immediately below the eye, which soon developed into an undoubted cancer. For two years past Mr. CHACE has had the best medical advice, and tried every remedy suggested by his physicians, without gaining any benefit, the cancer continually increasing in size until it threatened to eat away his face. Finally a council of physicians recommended the use of the knife as the only means of relief, but this resort involved so much danger that it was not employed. At this point the proprietor of the Turkish baths in Kansas City declared that he could cure the cancer in fifteen days, and Mr. CHACE determined to try the effect of his treatment. He was placed in the Turkish bath for two hours each day for seven days, with a temperature at 170, when it was found that the cancer was loosening. A poultice was then applied, and in a few days the ugly protuberance dropped out, root, fangs, and all, leaving nothing except the indentation in the face where the cancer had been. The cure was pronounced complete.

A Washington paper is of the opinion that "not two, nor three, nor half a dozen, nor twenty, nor any number of executions will have any effect in deterring murderers if the hangings are spasmodic." What the Washington paper wants, we presume, is to have them hanged with some sort of regularity, so that people can know just what to expect. And the suggestion is not by any means without merit. The experiment might be made for a year at all events, say at the rate of one a day after breakfast, just to try the effect upon the popular mind. And there is no place in the country that can better afford the material for the experiment than Washington.

The managers of the aquarium at the Crystal Palace, Sydenham, have made an interesting discovery. Although they had been very successful with their marine aquarium, they found it extremely difficult to keep the fish alive in their fresh-water tanks, notwithstanding that the management of fresh-water fishes and aquatic animals is usually considered much less difficult than that of the inhabitants of the sea. At last they discovered the cause of all the trouble. The directors had supplied their tanks with water provided by a London company, and it was found that the water used for drinking purposes by a large portion of the inhabitants of London, being infected with sewage, was of so poisonous a quality that it killed off the fish that were placed in it so rapidly as to seriously interfere with the attractiveness of the exhibition.

SOME NEW BOOKS.

A Very Interesting Work on the Ocean.

If, as Dr. Bushnell says, the new education is the education in things, in distinction from the old, or the education in letters—the new being as much superior to the old as God who made things is above man who made letters—then our publishers are making large contributions to the new order. The popularization of science or the making everybody acquainted with the things and their constituents that we see, handle, and live in, is the fashion. It is becoming possible nowadays for the ordinary man to be acquainted with the principles of science, and for the scientist to be quite like an ordinary man in the respect of being human and sometimes humorous.

Here is a book, *The Ocean, Atmosphere, and Life*, by ELISEE RECLUS, just published by Harper & Bros., being the second series of a descriptive history of the life of the globe by the same author, which is packed full of the most interesting information and instructive facts upon a subject with which very few even of the class whose business of navigation calls them into direct relations with it have any acquaintance. It is such a book as would have gladdened the heart of the old Greek whose name headed the list of the Seven Sages, and who had spelt out laboriously a system of philosophy which traced the origin of all things and resolved all things back to water. Old Thalis would have laughed with delight at the story which our author unfolds in the five hundred pages of the multitudinous life of the ocean, its great arterial and venous circulation, its lifting up of islands and demolition of continents, its influences upon animal and vegetable life, upon climate, soil, and production. Twenty-two centuries later, though, the publication of such heresies as this book contains would have brought author and publisher to the sackcloth and ashes, and the seven penitential psalms per week that were put upon poor Galileo, and perhaps more.

The author begins his work with the glimmer of a great truth in Pindar's exclamation in the early days of Hellenic civilization, "Water is the chief of all," and with the declaration in almost all the cosmogonies of primitive nations that the earth is "the daughter of the ocean." This is not a myth, but a scientifically demonstrated fact. The study of the strata of the earth proves that the materials of the continents have been deposited at the bottom of the sea, and then assumed form and character. The sides and summits of the highest mountains, thousands of feet above the level of the ocean, exhibit unmistakable traces of the ancient action of the sea. The immense work of creation is carried on under our very eyes, and with such energy that during a lifetime many important changes in the shores of the seas are seen. Here peninsulas are destroyed, their beaches are spread out and islets raised. Now rocks differing in form and arrangement succeed ancient ones demolished by the waves; promontories of granite are disintegrated and their constituents transferred and rebuilt. Animal life contributes constantly to those changes; innumerable animalculæ with calcareous or silicious coverings are incessantly engaged in consuming and reproducing; they absorb and digest matter brought down from the rivers and then, perishing in swarms, their remains are spread out over the sea bottom, forming immense banks and submarine plateaus which will at some time be brought to light. Owing to this ceaseless waste and renewal the ocean is constantly creating a new world, differing from the old in the appearance and disposition of its beds. The ground which to-day bears us and our cities will in the lapse of ages disappear as the continents of former epochs have disappeared, and the unknown spaces now covered by the waters will in their turn rise and appear in continents, islands, and peninsulas.

To the influence of the sea the author traces not only the changes in the configuration of the shore by the direct action of the waves, but all the changes in the surface of the globe by the action of rain clouds, waves of atmosphere, and all meteoric influences. It is the sea which despatches the atmospheric agencies which rage about the summits of mountains, driving them and gradually lowering them; it is the ocean cloud which deposits the snow that forms the glaciers which polish the rocks and carry the boulders down into the valleys, and it is to the phenomena of oceanic life that the immense geological operations of rivers and the part they play in the flora and fauna of different countries, and in the history of humanity itself, are attributable.

As for climate, upon the varieties of which all life depends, it plainly follows from movements of the ocean, as well as from the position and elevation of masses of land. The influence of the ocean currents, which convey water from the poles to the equator, and from the equator to the poles, in mitigating the signs of polar latitudes and modifying the intensity of tropical heat, can hardly be over-estimated, since, without them, life would hardly be possible. So, too, the atmosphere of continents depends in large measure for its fibres for breathing upon the humidity it derives from the sea, and which is spread by the winds all over the globe. "Thus," he says, "the ocean blends the contrasts of climate, and makes a harmonious whole of all the distinct regions of our planet; it awakens and preserves life on the earth, which it has deposited layer by layer, which it waters by its vapors and renders fertile by its springs and its rivers."

The work is divided into three great parts, entitled, respectively, The Ocean, The Atmosphere and Meteorology, and Life, each part being subdivided into books and chapters, under the heads of the several topics suggested. Over two hundred illustrations, twenty-seven of which are colored, assist the reader to a better understanding of the text.

The description of the oceanic basins is almost in the nature of a revelation, by the upheaval of the broad continents over which the seas have rolled for geologic epochs. It is impossible, of course, at the present stage of scientific inquiry, to make a perfect map of the ocean bottoms, but discovery and research have so far defined the salient features and the general contour of the great basins that our author is able, by a very slight effort of the imagination, to strip off the watery mask and disclose the vast profound, with its lost continents, its broad plateaus, its cliffs and caverns, its mountains, valleys, and all its wonderful life.

Here, for instance, is a very graphic portrayal of the effects of certain subsidences of ocean levels:

> Considered as a whole the North Atlantic is a depression, whose sides descend gradually toward a central hollow situated between the coasts of the United States, the Bermudas, and the Banks of Newfoundland. A fall of the waters of less than 110 fathoms would reveal the submarine groundwork upon which France, Spain, and the British Isles rest. This is indeed the true foundation of the European Continent, for immediately beyond this basement, which forms the extreme angle of the Old World, the bed of the sea, at an inclination of about eight degrees, descends gradually from 110 fathoms to 1,640 and 2,187 fathoms below the waves. A fall in its level of 1,094 fathoms would diminish the width of the Atlantic more than half, would leave the Gulf of Mexico completely dry, and only leave an elongated lake in the central part of the Caribbean Sea. If the present level were lowered by 2,187 fathoms, a continent separated from Europe and America by two narrow channels, and extending over a space of from about 1,550 to 1,860 miles, would stretch into the Torrid Zone, and by a remarkable coincidence would effect that peninsular conformation and southerly direction presented by Greenland, Scandinavia, Spain, Italy, Greece, Arabia, India, and the three great continents of the South. (Sir John Herschel's Physical Geography, p. 35.) A lowering of 3,280 fathoms will completely unite Newfoundland to Ireland, and consequently form a bridge between the Old and New Worlds. Even of the Central Atlantic there would only remain a narrow "Mediterranean" Sea in front of the Antilles Guiana. Finally, let the waters be lowered to 4,375 fathoms and the northern part of the Atlantic would be reduced to a small triangular "Caspian," situated between the Azores, the Banks of Newfoundland, and the Bermudas.

Concerning the ice fields, the formation of icebergs and the immense influence exerted by them in the work of building up submarine plateaus such as the banks of Newfoundland and the telegraph plateau, there is a very interesting chapter. The process is thus described;

> The enormous masses of icebergs like gigantic ships are often stranded on shoals even where the depth of the sea exceeds a hundred fathoms. Arrested in its southward drifting, the immense block dissolves or divides into fragments which in their turn are stranded on some other bank at a less depth. Day by day the waves swell and destroy great quantities of ice which then let fall the gravel and stones with which it was charged, and in this manner continually raises the sea bottom. Every year new beds of rock, pebbles, and earth from the mountains, from Greenland and the Archipelago of North America, are thus deposited on the Banks of Newfoundland and in the neighboring seas, laying the foundations of a new continent. Doubtless the Great Bank, which extends over a tract of 55,000 square miles, and which has its foundation in a sea of about four to six miles deep, is composed entirely of this moraine matter of glacial origin. Thus, during a long series of ages, the ice floes have been laboring without relaxation to demolish the Arctic lands and to construct new continents in the seas of the temperate zone. From the time of the breaking up of the northern ice—that is to say, from the beginning of March to the month of July, and even to the month of August—that part of the Atlantic to the east of the Banks of Newfoundland assumes the appearance of the Arctic Sea. The Polar current descending from Baffin's Bay parallel to the coast of Labrador brings with it in long procession the fragments of the ice fields and glaciers of Greenland. After having rounded the banks of Newfoundland the current bends toward the southwest with its burden of ice in consequence of the movement which carries the earth in an easterly direction and causes a deviation in its course in everything coming from the north. Carried by this current, which drives them in an opposite direction toward the Gulf Stream, continuing its course toward the southwest below the surface current of the latter, the icebergs, like ships cutting the waves with their prows, pass majestically through the water which dashes against them.

Of the danger of ships navigating this region he says;

> It is principally in this region of the ocean that flotillas of ice are to be dreaded by navigators. The sailors of Newfoundland hardly ever approach one nearer than about a mile, and then always keeping to windward of them, for otherwise they would be in danger of drifting upon the terrible mass, toward which in addition a somewhat strong current is always flowing to replace the upper stratum of water rendered colder by contact with floating mountains. Enveloped in fog in consequence of the lowness of their temperature compared with that of the warm, humid air from the south, the gigantic hull of the glacier discovers itself to seamen by strange whitish reflections, and also by the intense cold of the surrounding atmosphere. But sometimes when this indication of peril has just been recognized it is too late to avoid the shock. Hundreds of ships overtaken by the ice have thus disappeared with their crews in the cold waters of the ocean. At other times, even in clear weather, one meets with a whole archipelago of ice floes, and in order to avoid them it is necessary to steer with the greatest precaution for days together. It was thus in 1821 the English brig Ann, surprised by the ice before Cape Race, not being able to enter a free sea, was obliged to remain twenty-nine days surrounded by towers and threatening peaks. Happily these fragments of glaciers diminish very quickly in number and height as soon as they enter the zone of the Gulf Stream.

In the chapter on "Waves; their height and speed," the reader will recognize some of the facts used as illustrations in Prof. Tyndall's first lecture on the subject of waves of light and sound. As to the height and amplitude of waves he says observers have obtained different results. He computes the average height of an undulation to be a fifteenth part of its base. Thus, a wave of thirty-three feet in height measures 495 feet from valley to valley. Of their speed, he says:

> The speed of the waves is only an apparent speed, like that of the folds of a cloth raised by a current of air. Thus, although the water pressed by the wind rises and sinks by turns, it nevertheless hardly changes its place, and objects floating on its surface move but slowly and in an undulatory manner. The real movement of the sea is that of a drifting current, which gradually forms under the prolonged action of the wind; but this general movement of the liquid mass is after all inconsiderable. The only part which advances with the storm is the foaming, which, curling over the summit of the waves, dashes down the slope in front.

Concerning the strength of waves, these facts are interesting:

> Before all seaports and roadsteads where great works, such as sea walls and breakwaters, have been constructed, seamen have been able to observe the prodigious power of the angry water. On all the exposed works at Holyhead, Kingstown, Portland, Cherbourg, Port Vendres, and Leghorn, the waves have been seen to seize blocks weighing several tons and hurl them like playthings over the dikes. At Cherbourg, the heaviest cannon on the rampart has been displaced. At Barra Head, in the Hebrides, Thos. Stephenson states that a block of stone of 43 tons was driven more than 1½ yards by the breakers. At Plymouth, a vessel weighing two hundred tons was thrown, without being broken, to the very top of the dike, where it remained a wreck, as on a shelf, beyond the fury of the waves. At Dunkirk M. Villarceau has ascertained, by the most delicate measurements that during a heavy sea the ground trembles at nearly one mile from the shore. In the Gulf of Gascony, so frequently visited by tempests, the waves coming from the west and northwest are drawn into a sort of funnel and hurl themselves against the shores with a force at least equal to that of the waves in the Channel and the English seas. The works constructed by engineers to protect the roads and forts against this terrible pressure have been frequently swept away or much damaged by the waves. Man must incessantly continue the strife he is engaged in with the sea under pain of seeing the work of a century destroyed in a day. During the winters of 1867 and 1868 M. Paloa says that blocks of masonry thirty-six tons in weight, placed at the extremity of the dike at Biarritz, were thrown horizontally from eleven to thirteen yards. One block was even raised seven feet, carried over the breakwater, then thrown down and rolled to a great distance during the storm. At St. Jean de Luz the surf is still more terrible, and some of the masses of stone now employed in constructing the dike of Socoa at the entrance to the roadstead are not less than from eighty to ninety cubic yards; and yet even this strong wall would not be strong enough if not additionally defended by stones scattered loosely here and there, forming a range of protecting rocks in front of the dike upon which the sea expends its fury.
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> The only places where the waves display a still greater power than in the Gulf of Gascony are those that are sometimes ravaged by the tornadoes. In the Isle of Reunion there is to be found in the middle of a savannah a mass of block of madreporic stone, which is no less than 510 cubic yards in size. It is a piece that the waves have detached from a reef and driven before them across the land.

In the chapter on the Gulf Stream, its influence on climate, and its importance to commerce, the author has collected a large amount of interesting information, much of which has already become familiar to American readers through "Maury's Geography of the Sea," from which the author quotes largely. The chapter closes with the following reflections:

> Thus is completed the immense circuit of the Atlantic, in the centre of which the sea meadows of rock extend and cluster like an archipelago. It is owing to this perpetual circuit that navigators in sailing vessels have been able to reach the New World from Western Europe. If Columbus had not made use of the semi-circular current which flows from the coasts of Spain to the Antilles, he certainly would not have discovered America. If the pilot Alaminos, and since his first voyage the greater part of the navigators returning from the Antilles and the United States, had not, either without knowing it or else understanding the cause, followed the course of the Gulf Stream, the coasts of America would have remained practically far more distant from Europe than they really are. The colonies, now become so prosperous as independent republics, would be still in deplorable isolation, and civilization would have been greatly retarded, or even completely arrested for want of new impetus. As to commerce, properly so called, we can judge of the influence exercised upon it by the movement of the waters of the Atlantic, when one examines on a map the position of the great centres of trade. Havana and New Orleans, two principal markets of the Antilles and Mississippi States, are, so to say, at the source of the Gulf Stream. New York is situated facing the principal head of this current at the spot where the vast river flowing from the Antilles bends toward Europe. Finally Liverpool, among so many considerable ports washed by the Gulf Stream on its arrival at the coasts of the Old World, is the one which is most directly in the path of its waters.
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> When Franklin discovered in 1775 that the mariner had only to plunge a thermometer into the water of the Atlantic to discover if he is sailing over the Gulf Stream or outside its course, the illustrious savant immediately perceived the importance of this fact for navigation. He even thought for a long time he must conceal it, from a fear that the English Government, then at war with the American colonies, would profit by this discovery to send ships and men more rapidly against their revolted provinces. After the definite establishment of American independence, no peril of this kind being any longer to be feared, all navigators were enabled for the future to know precisely the high road which they had to follow in the open sea to reach Europe most expeditiously from America, and what particular line to avoid in order to effect the journey in an opposite direction. During the middle of the last century the whalers of Nantucket and the skippers of Rhode Island had already from experience come to choose two different routes for going and returning. In order to "descend" on England they allowed themselves to be carried with the Gulf Stream, and on their return crossed this current at the Banks of Newfoundland and "mounted" the Arctic counter current. On these voyages they distanced other vessels from other seaports on an average by seventy-four miles per day.

The phenomena which occur in the Bosphorus at Gibraltar, the Straits between the Baltic and North Seas, and at the outlet of the Red Sea, whereby the equilibrium between the levels disturbed by excess of evaporation or super-abundance of confluent streams is restored by simultaneous counter currents above and below, are illustrated and very clearly explained. Concerning the counter currents at Gibraltar he says:

> At the western part of the Mediterranean, between Gibraltar and Ceuta, the normal current is that coming from the ocean. In fact the Mediterranean has not many considerable tributaries. It only receives a single river having a really great mass of water, namely, the Danube. Its other affluents of any importance—the Rhone, the Po, the Dniester, the Dnieper, the Douro, and the Nile—being on an average not more than 19,620 cubic yards of water per second. On the other hand evaporation is very rapid in the bosom of the Mediterranean, especially on the coasts of Egypt and Tripoli. The result is that the Mediterranean loses three times as much water as it receives by its tributaries. It is the ocean then which must fill up the void. A portion of the current which flows from north to south along the coasts of Portugal and Spain enters by the Straits of Gibraltar and spreads far into the Mediterranean in superficial sheets. Nevertheless if this inland sea did not also send a counter current to the Atlantic it would sooner or later be changed into an immense plain of salt. Incessantly losing fresh water by evaporation, and always receiving salt water from the ocean, its liquid mass would become in the end completely saturated, and the crystals of salt would line the massive bed in ever increasing layers. In order that the equilibrium of saltness between the two seas should not be interrupted it is necessary that the Mediterranean should send its saltest waters to the Atlantic. This is in fact what takes place. Besides the lateral eddies that occur along the shores on each side of the current coming from the Atlantic, a Mediterranean counter current flows below the lighter superficial waters and takes its direction toward the ocean. This submarine river which passes the Straits of Gibraltar to be lost in the open sea is, as chemical analyses have shown, a current of heavy water almost saturated with salt. Thus an exchange is accomplished through that narrow passage; the Atlantic gives to the Mediterranean the water which it needs and receives in return its superfluity of salt to diffuse through the ocean. The sea endeavors incessantly to reëstablish its constantly disturbed equality at the boundary of the two marine basins at a depth of about 546 fathoms.

Necessarily a little more scientific, and perhaps not so interesting to the general reader, are the chapters on the influence of the heavenly bodies on the ocean, as exhibited on the tides, through the description of the great "bore" of the Bay of Fundy, the mouth of the Ganges, and Mount St. Michael, is intensely interesting. That at the Bay of St. Michael is thus described:

> It is in the Bay of St. Michael, on the western coast of Europe, that the rising tide presents the grandest spectacle, for in the centre of the bay rises a black granitic rock—"abbey, cloister, fortress, and prison," at the same time—which, by its abrupt precipices and its "titanic pile rock upon rock century after century, but always dungeon over dungeon," contrasts with the dreary extent of the shore. At low water the immense sandy plain, above 150 square miles in extent, resembles a bed of ashes. But when the tide, swifter than a horse at full gallop, rises foaming over the scarcely perceptible slope, a few hours are sufficient to transform the whole bay into a sheet of grayish water penetrating far up the mouth of the rivers as far as the quays of Avranches and Pontorson. At the ebb the waters retire with some speed to nearly 6¼ miles from the shore, and lay bare the great desert strand which is intersected by the subterranean deltas or tributary rivulets, forming here and there treacherous abysses of soft mud, into which travellers are in danger of sinking. At the time of spring tide the liquid mass that penetrates into the bay is estimated at more than 1,470,000,000 of cubic yards, and even at neap-tides the deluge which pours over the beach twice in the twenty-four hours is not less than about 765,000,000 of cubic yards.

The processes by which the fjords of Scandinavia were formed are described at length. Possibly the author takes a kind of Gallic satisfaction in relating that the Straits of Dover are being constantly enlarged on the English side by the action of the waves, the erosion amounting on an average to about twenty-seven yards per century. At this rate he estimates that it was only about 60,000 years before the present epoch that the isthmus connecting England with the Continent was broken by the pressure of the waves.

The wearing away of rocky promontories is not always accomplished by the simple erosion of the waves, and the rocks and *débris* which they use as battering rams. Strange as it may appear, the water of the sea sometimes destroys rocks on its borders by combustion.

> Thus the cliffs of Ballybunnion on the western coast of Ireland long presented the appearance of smoking lava. These rocks, which the waves of the Atlantic have pierced with grottos and sculptured in massive and fantastic forms, having one day fallen down very extensively, the alumn pyrites which is contained in considerable proportion in the rocks were exposed to the action of the atmosphere and the sea water. A rapid oxydation took place and produced a heat sufficiently intense to set the whole cliff on fire. For weeks the rocks were burning like a vast coal fire, and masses of vapor and smoke rose like clouds above the high wall besieged by the surf. Scattered around the space where the fire had prevailed a heap of melted scoriæ and clay transformed into brick by the violence of the fire was to be seen.

The processes by which the waves seem to create or recombine the elements they have disintegrated is described as follows:

> In the seas whose waters have a high average temperature the waves do not confine themselves to constructing littoral ridges and filling up the bays. They even build actual ramparts of stone. In consequence of the rapid evaporation produced by the rays of the sun the calcareous particles and mud retained in the water are gradually deposited along the shores and over the base of the promontories. Mixed with sand and fragments of shell they tend to form solid shores, with regular contours. On the Atlantic coasts of France—at Royan for example—one can here and there already observe some formations of this kind, and further to the north, at Elsinore, some of the stones have been discovered containing ancient Danish coins. On the French shores of the Mediterranean these modern rocks are very numerous, and in a short walk one can often collect a large quantity of sandy blocks and various conglomerates united by calcareous substances and containing multitudes of broken shells. The museum of Montpellier possesses a cannon which was discovered near the principal mouth of the Rhone embedded in a calcareous deposit. On the northern coasts of Sicily, where the mean temperature of the water rises to 64.4 degrees Fahrenheit, the stones and pebbles of the shore are in many places agglutinated by calcareous cement. In the same way the fragments of rocks which the torrents of Arabia Petræ bring every winter from the top of the mountains to the shores of the Red Sea, are in the space of a few weeks converted into a stratum of solid conglomerate. Every year a new layer of stone is added to the old ones, and in future centuries we shall be able, perhaps, to estimate the age of the formation by the number of its beds, one over the other, in the same way as we recognize the age of a tree by the number of its annual rings of wood. We must explore the shores of the Antilles or other tropical seas to observe this phenomenon of the formation of rocks in all its grandeur. There the waves heated to 89.6 degrees Fahrenheit by the rays of a vertical sun, deposit limestone in sufficient quantity to increase the extent of the shore. The tufa of Guadaloupe, in which the famous human skeleton exhibited at the British Museum was found, belongs to this recent formation. It grows, so to say, under the very eyes of the observer, and gradually covers with a rocky crust all those objects which the sea rejects and which the brooks bring down from the interior. In many parts of terra firma these quarries of marine stone are actively worked for building towns on the coast, and all the excavations made in these banks of limestone are soon filled up by new materials. The quarry grows under the laborers who are occupied in detaching the blocks. Hence the name of *maçonnerie, bon Dieu*, which the natives have given to those rocks which seem to be renewed of themselves.

In that portion of the work devoted to the atmosphere and meteorology the phenomenon of the mirage is described briefly and its causes explained, and the methods of measuring heights by barometrical indications are set forth. The first direct experiment establishing the diminution of the weight of the air in a vertical direction was by Perier, who, ascending Puy-de-Dôme with the barometer in his hand, observed that during his ascent the column of mercury which measured the atmospheric pressure never ceased to sink gradually in the tube; and thus the means of measuring the height of mountains above the level of the sea by reading the barometric indications were discovered.

The question to what height the air is dense enough to furnish the oxygen necessary to support life has not been definitively answered, but, thanks to the balloon, aeronauts have been able to ascend to heights which even the condor does not reach. Some of these experiments are thus referred to:

> In 1804 Jay Lussac ascended to four miles and a half, in 1851 Barral and Bixio ascended a little higher. In 1858 Rush and Greene rose to five miles; but these are all altitudes inferior to the highest summits of the continents. Finally on Sept. 5, 1862, Glaisher and Coxwell undertook a aeronautic expedition in which they resolved to ascend as long as they could preserve the sense of their own existence. The air becoming too rare for their lungs hardly allowed them to pant. They had palpitation of the heart singing in the ears; the blood swelled the arteries of their temples; their fingers froze and refused to move; but their wills sustained them. They threw more sand from the car and thus gave themselves a new impetus into the atmosphere. Glaisher fainted away, but his companion did nothing to arrest the ascent. His eyes fixed on the instruments, he noted with a glance the gradual sinking of the column of mercury in the barometer and thermometer as if he were at the Observatory at Kew. Gradually taken possession of by torpor, the aeronaut lost the use of his hands, but he still held the cord of the valve between his teeth; and when he felt that but one single second separated him and his friend from death, then he let the gas escape and the balloon was arrested and descended gradually toward the plains situated at six and a half miles below, for the column of the barometer was only 6.5 inches.

The unscientific reader will be greatly interested in the chapters on the aërial currents, the trade winds, the monsoons, cyclones, and hurricanes, with the the mass of instructive information concerning them. Of instances of the terrible effects of hurricanes the following are cited:

> On the 26th of July, 1825, during the hurricane of Guadaloupe, a gust of wind seized a plank an inch thick and sent it through the trunk of a palm tree sixteen inches thick. In the same way, in a lesser whirlwind which passed near Calcutta, a bamboo was hurled through a wall of a yard and a half in thickness. That is to say, the air in a movement over this point had a force equal to that of a six-pounder. At St. Thomas, in 1837, the fortress which defends the entrance of the port was demolished as if it had been bombarded. Blocks of rock were torn from a depth of 30 or 40 feet beneath the sea and flung on shore. Elsewhere solid houses torn from their foundations have glided over the ground as if flying before a tempest. On the banks of the Ganges, on the coasts of the Antilles, and at Charleston vessels have been stranded far from the shore, in open plains, or in forests. In 1681 a vessel from Antigua was carried up the rocks three yards above the highest tides, and remained like a bridge between two points of rock. In 1825, at the time of the great hurricane of Guadaloupe, the vessels which were in the road of Basse Terre disappeared, and one of the captains happily escaping, recounted how his brig had been seized by the hurricane and lifted out of the water, so that he had, so to speak, "been shipwrecked in the air." Broken furniture and a quantity of ruins from the houses of Guadaloupe were transported to Montserrat over an arm of the sea eighty miles wide. From the mountains of St. Thomas the immense black whirlwind was seen from afar to pass across the sea, and over the islands of Porto Rico and Santa Cruz.
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> The most terrible cyclone of modern times is probably that of the 10th of October, 1780, which has been specially named "the great hurricane." Starting from Barbados, where neither trees nor dwellings were left standing, it caused an English fleet, anchored off St. Lucia, to disappear, and completely ravaged the island, where six thousand persons were crushed under the ruins. After this the whirlwind tending toward Martinique, enveloped a convoy of French transports, and sunk more than forty ships, carrying four thousand soldiers. On land the towns of St. Pierre and other places were completely razed by the wind, and 9,000 persons perished there. More to the north, Dominique, St. Eustatius, St. Vincent, and Porto Rico were likewise devastated, and most of the vessels which were on the path of the cyclone foundered with all their crews. Beyond Porto Rico the tempest sped to the northeast toward the Bermudas, and though its violence had gradually diminished, it sunk several English war ships returning to Europe. At Barbados, where the cyclone had commenced its terrible spiral, the wind was unchained with such fury that the inhabitants hidden in the cellars did not hear their houses falling above their heads. They did not even feel the shocks of earthquake which, according to Rodney, accompanied the storm. The rage of man was arrested before that of nature. The French and English were then at war, and all the ships which the sea swallowed up were laden with soldiers seeking to destroy one another. At the sight of such ruin the hatred of the survivors was calmed. The Governor of Martinique caused the English sailors who had become his prisoners in consequence of the great shipwreck to be set at liberty, declaring that in the common danger all men should feel as brothers.

Perhaps the most interesting chapters in the treatment of the subjects of atmosphere and meteorology are those which relate to clouds and rains. The formation of mist and clouds, the influence of winds on the formation of snow and rain, the distribution of rain over plains and mountains, perodicity of rains and countries without rain are among the topics, and the author's treatment of them combines entertainment with instruction.

From the chapter on auroral phenomena we extract a single paragraph in the nature of an explanation:

> It may be considered certain that the extremities of the earth are in intimate connection with one another, through the electric and magnetic currents continually circulating between them both in the air and the mass of the globe. The researches of M. Becquerel and other natural philosophers have shown that it is probable that the superior strata of the atmosphere are almost always charged with positive electricity, and the warmer strata reposing on the surface of the land and of the sea with the opposite kind of electricity. In consequence of the enormous evaporation from seas under the tropics, the moisture charged with positive electricity, rising to the upper atmosphere, maintains it in a state of constant tension. But violent thunder storms accompanied by very abundant rain constantly tend to restore the equilibrium. Away from the tropical zone the higher and lower strata less strongly electrified, no longer by sudden discharges but by the silent action of the polar auroras, meet the contrary electricities, and are neutralized. Such is the theory. In any case it is certain that the auroras are electrical phenomena, since they act on the wires of the telegraphs like voltaic batteries, and since the colors of the arc beams and auroral rays are precisely those of the ordinary spark passing through rarified air. At the same time auroras are magnetic phenomena, as is proved by their powerful action on the movements of the needle. Though produced in the atmosphere, and always accompanying the globe in its diurnal rotation, they are also very probably astronomical phenomena, obeying in their successive periods the cycles of the air. Solar attraction, magnetism, electricity are all convertible forces, which work in concert to modify incessantly and then to reëstablish the equilibrium of the atmosphere.

The last division of the work on *Life* treats of the origin of life, influence of climate, of nature, and of the sea on mankind, explorations of the globe, voyages of discovery, and many more kindred topics, all of which are handled in an entertaining and instructive style, which is characteristic of the whole book. It very rarely happens that so much information of practical value is presented in such an agreeable fashion as in this book.

STARVATION AT SEA.

More Immigrants Thrown upon New York Hungry and Destitute—Their Sufferings on the Passage—37 Cases of Death.

Four vessels arrived from Europe yesterday, bringing to this city 1,780 immigrants, among whom were 600 Italians who were taken on board at Havre. The immigrants all bore evidence of a stormy passage, many of them being in a dying state, especially those who arrived in the Smidt and Columbus from Bremen. In the latter vessels thirty persons died and were thrown overboard. For twenty days they were battened down in the hold with little to eat. One thousand seven hundred and eighty persons standing shivering in the wide rotunda at Castle Garden presented a spectacle not often witnessed.

The Italian emigrants who arrived from Havre in the Erin looked wretched. They were much emaciated, and bore the traces of the rough weather and the ill treatment received on board. Instead of being placed in proper bunks they were accommodated on the main deck in temporary fixtures fronting the water closets, while the English passengers occupied the berths in the steerage cabins.

The stewards of the vessel ran away at Havre, and some of the English steerage passengers were engaged in their place. They being unused to the sea, neglected the passengers to such a degree that one of the stewards was set upon and nearly murdered by the Italians. One of the immigrants who comes from Genoa, and who has lived in Boston for some years, states that some days the passengers only got some cold, half-boiled rice and soup to eat. They seldom got bread or potatoes, and had it not been that he had some money with him he would have died for want of nourishment. He says that seven persons died from this cause. One of the stewards, who is an Englishman, admits that the Italians were not as well treated as they would have been if the stewards had been accustomed to the work.

The Italians are of the poorest classes of Rome and Genoa, many of whom were not able to pay their passage. Col. Coonan says that he does not know what the Commissioners of Emigration will do with these Italians. Those of the former shipment who had been sent to Vermont to chop wood, had only that day been sent back to Ward's Island, where there are now over two hundred.

Some fifty of this lazzaroni class who arrived in the first load have slept ever since their arrival in the galleries around the rotunda. They are fed by the Commissioners, and as soon as they get their breakfast leave, and employ their time begging in the streets, and return in the evening. An attempt was made to take them to Ward's Island with the others, but they would not go. Every attempt to get them employment has failed. It was thought that they might be used in removing the snow from the streets, but no one would engage them. The men are lazy, and even refused to assist the persons employed about the Garden in clearing away the snow yesterday.

Those who arrived yesterday were all booked for New York. Some of them are dressed in the uniform of the Pope's Brigade, and are all evidently lazzaroni, as only in one or two instances have they got any money changed at the Monetary Bureau. The resources of the Commissioners of Emigration are altogether exhausted, and these unfortunate people, many of whom are in a very emaciated state, will perish from cold unless something be done for them at once.